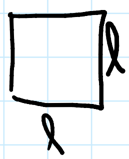
Clase 29/07

jueves, 29 de julio de 2021 01:51 p. m.

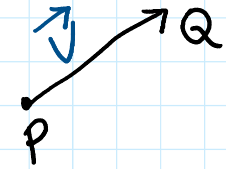
Cantidad Escalar



$A = l^2 [u^2]$

Cantidad Vectorial

- Magnitud
- Dirección
- sentido



$\langle 5, 4 \rangle$ Vector

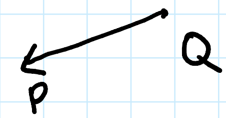
$(5, 4)$ Punto

$\overrightarrow{PQ}$

$\overrightarrow{QP}$

P: Punto inicial

Q: " Final

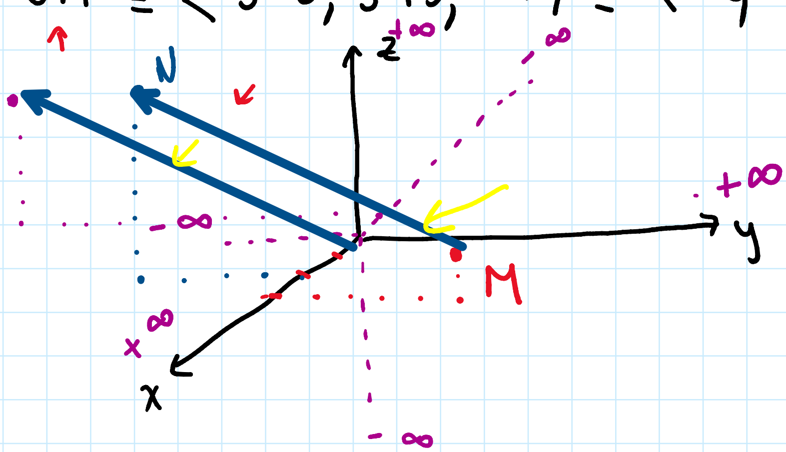


Ej: $M = (3, 5, 2)$ $N = (2, -4, 6)$ $O = (5, -3, 2)$

a) $\overrightarrow{MN} = \langle 2-3, -4-5, 6-2 \rangle = \langle -1, -9, 4 \rangle$

b) $\overrightarrow{NO} = \langle 5-2, -3-(-4), 2-6 \rangle = \langle 3, 1, -4 \rangle$

c) $\overrightarrow{OM} = \langle 3-5, 5+3, 2-2 \rangle = \langle -2, 8, 0 \rangle$

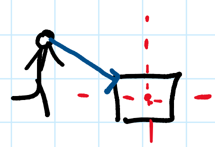


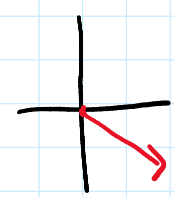
$\overrightarrow{MN}$

$M = (3, 5, 2)$ $N = (2, -4, 6)$

x, y, z

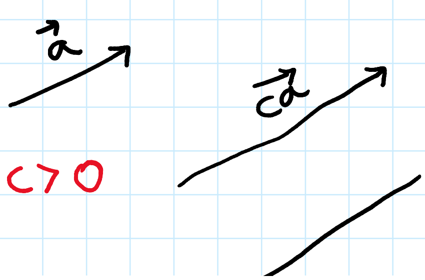
DCL





$\vec{a} + \vec{b}$ ✓

$c\vec{a}$ ✓



c $c > 0$

$c<0$

$0<c<1$

$\langle 2,4,6\rangle + \langle -2,-4,-6\rangle = \langle 0,0,0\rangle = \vec{0}$

Ej $\quad \vec{v} = \langle 2,-5,6\rangle \qquad \vec{w} = \langle 0,1,-2\rangle \qquad \vec{u} = \langle 3,2,-1\rangle$

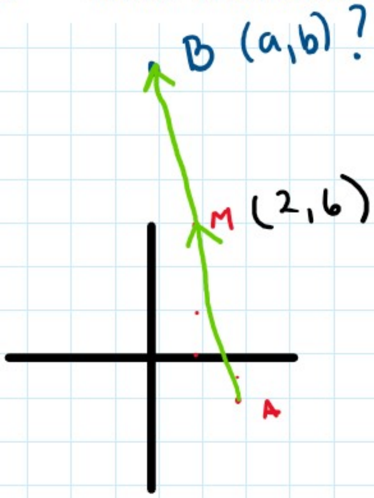
a) $2\vec{v} - 4\vec{w} - \vec{u}$

$2\langle 2,-5,6\rangle - 4\langle 0,1,-2\rangle - \langle 3,2,-1\rangle$

$= \langle 4,-10,12\rangle - \langle 0,4,-8\rangle - \langle 3,2,-1\rangle$

$= \langle 1,-16,21\rangle$

Exercise *Hallar el simétrico del punto* $A = (4,-2)$ *respecto de* $M = (2,6)$.



$\vec{AM} = \vec{MB}$ para ser simetrico

$\langle -2,8\rangle = \langle a-2, b-6\rangle$

$\langle 0,0,0\rangle = \langle 0,0,0\rangle$

$$\begin{cases} -2 = a-2 \\ 8 = b-6 \end{cases}$$

$a = 0$

$b = 14$

$B(0,14)$.

Example *Sea* $\vec{a} = \langle 4,0,3\rangle$ *y* $\vec{b} = \langle -2,1,5\rangle$ *encuentre* $\|\vec{a}\|$ *y los vectores* $\|\overline{a+b}\|$ $\overline{a-b}$, $\overline{3b}$ *y* $\overline{2a+5b}$.

Tres vectores en V_3 juegan un papel especial.

$\|\overline{a+\vec{b}}\|, \|\overline{a-b}\|, \|3\vec{b}\|, 3\|\overline{2a+5b}\|$

Tres vectores en $\mathbb{R}^3$ juegan un papel especial.

$\|\vec{a+b}\|, \|\vec{a-b}\|, \|3\vec{b}\|, 3\|\vec{2a+5b}\|$

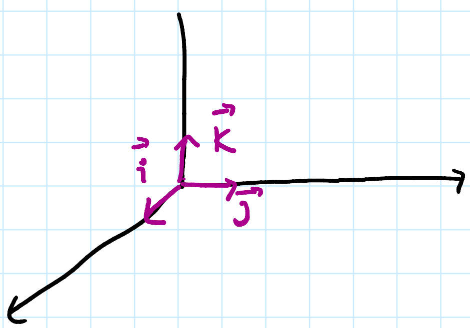
$\|\vec{a}\| = \sqrt{4^2+0^2+3^2} = 5.$

$\vec{a+b} = \langle 2, 1, 8 \rangle \qquad \|\vec{a+b}\| = \sqrt{2^2+1^2+8^2} = \sqrt{69}$ //

$\vec{2a+5b} = 2\langle 4,0,3\rangle + 5\langle -2,1,5\rangle = \langle -2, 5, 31\rangle$

$\|\langle -2,5,31\rangle\| = \sqrt{(-2)^2+5^2+(31)^2} = 3\sqrt{110}$

$3\|\langle -2,5,31\rangle\| = 9\sqrt{110}$ //



$\vec{i} = \langle 1,0,0\rangle$

$\|i\| = \|j\| = \|k\| = 1$

$$\langle a_1,a_2,a_3\rangle = \langle a_1,0,0\rangle + \langle 0,a_2,0\rangle + \langle 0,0,a_3\rangle$$
$$= a_1\langle 1,0,0\rangle + a_2\langle 0,1,0\rangle + a_3\langle 0,0,1\rangle$$
$$= a_1 i + a_2 j + a_3 k$$

Ej $\quad \langle 2,5,6\rangle = 2i + 5j + 6k.$

$\langle 2,0,3\rangle = 2i + 3k$

Ej $\quad \vec{v} = 3i - k \quad ; \quad \vec{w} = j + k \quad ; \quad i - j + 6k = \vec{u}$

$3\vec{v} - \vec{w} + 5\vec{u}$

$3(3i-k) - (j+k) + 5(i-j+6k)$

$9i - 3k - j - k + 5i - 5j + 30k = 14i - 6j + 26k.$ ✓

$$9i - 3K - j - K + 5i - 5j + 30K = 14i - 6j + 26K$$

$$= \langle 14, -6, 26 \rangle$$

$\cancel{\langle 14i, -6j, 26K \rangle}$

Ej: $A = (5, 6, 7)$ $B = (3, 7, 6)$ $C = (1, 2, -4)$ Hallar

a) $\| 3\overrightarrow{AB} - 5\overrightarrow{BC} + 0\overrightarrow{AC} \|$

b) $5\| 2\overrightarrow{BC} - 3\overrightarrow{CA} \| + 6\| 7\overrightarrow{BA} - \overrightarrow{AB} \| + \| \overrightarrow{BC} \|$

c) Hallar simetria del punto $(3,7,8)$ respecto al punto $(1,-4,3)$

d) $\| \overrightarrow{DC} - 4\overrightarrow{AB} + 4\overrightarrow{AD} - 6\overrightarrow{CD} \|$.